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*Published to advance the Science of cold-blooded vertebrates*

## NEST OF THE CUT-LIPS MINNOW

*Exoglossum maxillingua* (Le Sueur)

On May 8, 1921, in Butternut Creek, just east of Syracuse, N. Y., I observed an unusually large and dark colored Cut-lips Minnow (*Exoglossum maxillingua*) busily carrying small stones from the gravel of the stream bottom and piling them close to and partly under a submerged, rusty, and moss-covered sheet of tin. This was undoubtedly the nest-building activity and is similar to that of the River Chub (*Hypobopsis kentuckiensis*) and the Fall-fish (*Semotilus corporalis*.)

Butternut Creek is a large creek with rapid and normally clear water and with a stony bottom. It is a fair trout stream. Rainbow and Brown Trout are reported to thrive there. It is a tributary of Chittenango Creek, which flows into Oneida Lake.

The Cut-lips' nest was found just below the concrete bridge of the main State road just north of Jamesville and near Fiddlers Green. The fish could readily be seen from the bridge bringing stones to the nest from distances up to about three feet from it and from points chiefly up stream. Spawning was not observed, but once it made a very evident attempt to corral at the nest from a small school of Cut-lips minnows one with a much swollen abdomen, which in all probability was a gravid female.

On May 9, the day following the discovery of the nest, it was again visited by me and with equipment for more detailed observations and records. The

creek here was about 50 feet wide with bottom of gravel, boulders and cobble stones. The water was clear and cold ( $57^{\circ}$  F) and moderately swift. The maximum depth, just under the bridge, was about four feet. The nest was in  $2\frac{1}{2}$  feet of water some ten feet from the north side of the creek. The fish had stopped working but remained close to the nest concealed or partly so by the sheet of tin, boulders, or streamers of *Cladophora*. When disturbed it would leave the neighborhood of the pile with seeming reluctance and was quick to return after going but a short distance away. Attempts to net this attending fish for a close examination of it were unsuccessful, and it would not touch a worm-baited hook when near its nest, but was seen to be attracted by it when some distance away in the deeper part of the stream. Here four large Cut-lips were caught by hook, and one was a robust male  $4\frac{3}{4}$  inches long and with a much darker color than the others. This was very probably the nesting fish since it did not return to the nest after the capture and since no other dark-colored Cut-lips was seen in the vicinity during the observations. The testes were large, but stripping could not be effected.

The nest was a low pile of stones not clearly defined from the bottom material but roughly circular with a diameter of about 18 inches and perhaps three inches in height. The stones were quite uniform in size and small compared with those of piles made by Fall-fish and River Chubs that I have seen. Their largest diameter was about a half-inch. All were rough and angular. Probably such were selected from the inability of the minnow with its small mouth to get a purchase on smooth stones. No eggs were adhering to the gravel of the nest examined. If they are normally loose they could not have been obtained in the deep rapid water with any means at hand.

From an examination of literature I have found no data on the life history of the Cut-lips and such is

meagre at any rate, so it is probable that these few notes merit special publication.

T. L. HANKINSON,  
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## DESCRIPTION OF THE SPAWNING HABITS OF *Pseudopleuronectes americanus* IN CAPTIVITY.

At the Woods Hole fish cultural station the Winter Flounder is allowed to spawn naturally in large wooden tanks, which act they perform always at night although they are under the glare of the electric lights used for purposes of illumination. The act was reported to take place usually between 10:00 P. M. and 3:30 A. M., and this was substantiated by observation. At 3:00 A. M. on February 24, 1921, the following notes were made.

There appeared to be no distinct pairing, and in this case five fish partook of the action. Three were males and two females. Previous to the time of spawning they exhibited considerable activity, restlessly swimming about, especially in the case of the females. These were seen to "nose" around the males, but this may have been more or less incidental.

The essential part of the act seemed to be a rapid swimming in a circle about a foot in diameter, or more properly, an upward spiral of very slight pitch. In all cases they swam counter clockwise, which presented the vent outwards. As the fish gyrated around in this manner the genital products were discharged. The entire five examples observed thus moved in intersecting circles, or ones nearly so, for about 10 seconds, at the end of which time they all sank apparently exhausted, to resume their sluggish existence resting on the bottom.

In the case of the females the eggs were so extruded that they flowed along the upper side of the long anal